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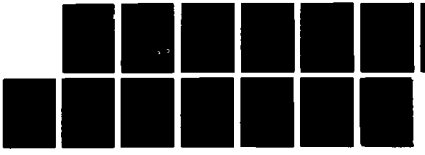

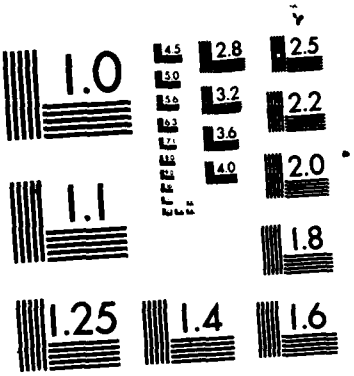

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DTIC MODEL ACTION PLAN FOR INCORPORATING DGIS CAPABILITIES

Project Final Report

Allan D. Kuhn
Randy L. Bixby

May 1986

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Defense Technical Information Center

Office of Information Systems and Technology

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The DoD Gateway Information System (DGIS) is being developed to provide the DoD community with a modern tool to access diverse databases and extract information products from them. The Defense Technical Information Center (DTIC) is responsible for the design, development, and implementation of DGIS. DGIS information processing capabilities are seen as a way of enhancing DTIC information services to its users, providing them with comprehensive results as compared with single database-specific results. A model plan for incorporating DGIS capabilities inhouse DTIC is formulated. A testbed office information flow survey is included. The survey aided as a mechanism to create the model plan, and serves as an example of the steps needed to plan for incorporating DGIS capabilities.

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FOR

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DEFENSE TECHNICAL INFORMATION CENTER
OFFICE OF INFORMATION SYSTEMS AND TECHNOLOGY
ALEXANDRIA, VA

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DTIC MODEL ACTION PLAN: INCORPORATING DGIS CAPABILITIES

Allan D. Kuhn and Randy L. Bixby

Defense Technical Information Center
Office of Information Systems and Technology

May 1986

KEYWORDS: Intelligent Gateway, Networking, Planning, Resource Sharing, DoD Gateway Information System, DGIS, Defense Technical Information Center, DTIC.

ABSTRACT: The Department of Defense (DoD) information community requires rapid, easy access to scientific and technical information relevant to DoD R&D missions. This information is contained in a multiplicity of databases maintained within the federal and commercial sectors. The DoD Gateway Information System (DGIS) is being developed to provide this community with a modern tool for accessing these databases and extracting information products from them.

Since the Defense Technical Information Center (DTIC) is responsible for managing the design, development, and implementation of DGIS, a major aspect is the application of DGIS capabilities to DTIC inhouse functions and activities. DGIS information processing capabilities are seen as a way of enhancing DTIC information services to its users, providing them with comprehensive results as compared with single database-specific results.

A model plan for incorporating DGIS capabilities inhouse is formulated. A testbed office information flow survey is included. This survey aided as a mechanism to create the model plan and serves as an example of the steps needed to plan for incorporating DGIS capabilities inhouse.

I. BACKGROUND

In October 1985 during a meeting at the Defense Technical Information Center on the progress of DoD Gateway Information System (DGIS) activities, it became apparent that with DGIS efforts concentrated out of house, very little was being done concerning inhouse uses and applications. Most inhouse use of DGIS was by the DGIS development staff. The Administrator, therefore, mandated that an action plan be established for incorporating DGIS in DTIC where applications would enhance DTIC services to its users.

Members of the DGIS development effort proceeded, therefore, to establish an action plan for incorporating DGIS in DTIC to search and aggregate information from external databases. This would mean that DTIC would have a simple, easy-to-use mechanism for acquiring and processing information from multiple and diverse databases, including DROLS.

The mission of DGIS is to provide the DoD community with a single, facile interface for accessing, interrogating, and post-processing information from the numerous databases relevant to specified DoD information needs. The DGIS features that help accomplish this mission are:

- Searching multiple and diverse database resources.
- Downloading information.
- Processing information through standardizing and merging.
- Reviewing and analyzing the information.
- Tailoring the information into a product useful to the user.

DGIS supplementary capabilities that support this mission are:

Linking interactively with another user.
Saving accessing and processing sessions for later review.
Creating information files for review and reference.
Transferring information via electronic mail or files copying.

This effort was supported by the major goals in DTIC 2000: A Corporate Plan For The Future. The model action plan implements the major goal, "DTIC will be an information-oriented organization providing a wider range of technical information for DoD," and its sub-goals to "Develop interorganizational database links," to "Use new technologies to expand the media in which DTIC products are provided," and to "Formalize DTIC's transition from product orientation to information orientation." By utilizing DGIS, DTIC will be able to expand its information services in a manner that is beneficial to the whole of the DoD scientific and technical community.

II. METHODOLOGY

In order to formulate a model action plan it was decided to go through the steps in a controlled manner by working with an actual office unit. The steps taken were:

Select an office unit.
Brief that office on DGIS capabilities.
Review DGIS use with the office.
Determine the office requirements for DGIS use.
Write model action plan.

The development of the plan included determining DGIS benefits to the DTIC office, to the user community that the office served, and implementation requirements. The office was briefed and given both demonstrations and hands-on experience. The office staff and the DGIS development staff were then to determine what DGIS capabilities enhanced the operations and services of that office. The DGIS capabilities adapted would determine the soft and hard requirements, e.g., training, equipment, etc., for setting up DGIS in that unit.

This approach resulted in the following planning elements that determined the content of the model plan:

Explain DGIS
Merge DGIS expertise and office operation expertise
Identify office operations and requirements
Identify problems
Identify management decision points
Propose solutions
Propose DGIS application to office operations
Identify benefits of proposed DGIS implementation
Identify impediments to and solutions for implementation
Create formal plan for DGIS implementation

III. TESTBED UNIT

Through the interest and support of the Director, DTIC Office of Database Services (DTIC-H), and of the Chief of the selected office, the unit that served as the testbed for model plan development was the DTIC Retrieval Analysis Branch (DTIC-HAR). HAR's mission includes servicing DTIC's registered users' requests for information held in DTIC's Defense RDT&E On-Line System (DROLS). HAR is organized on a production basis to service these requests by

searching DROLS and responding with bibliographies. The current response indicates only what is available through DROLS. The implementation of DGIS capabilities in HAR operations greatly expands the HAR resources for informing DTIC users of the existence and location of information relative to their queries.

IV. MODEL ACTION PLAN

The model plan resulting from the effort is below.

A listing of supplementary factors relative to components of the plan follows in section V. An office information flow survey, done as a test exercise for determining validity of the model plan, follows in section VI.

DTIC MODEL ACTION PLAN FOR INCORPORATING DGIS CAPABILITIES

I. Purpose.

This model serves as a guide for incorporating the capabilities of the DoD Gateway Information System (DGIS) into DTIC operations.

II. Model Phases.

This model is set up to follow through four phases:

Phase I: Explain DGIS capabilities.
Phase II: Identify DTIC office unit operations.
Phase III: Identify those operations which can be enhanced by DGIS.
Phase IV: Plan implementation of DGIS use.

III. Planning Model.

PHASE I. Explain DGIS Capabilities.

a. Schedule briefing(s).
b. Schedule demonstration(s).

PHASE II. Identify DTIC Office Unit Operations.

a. Survey office unit operations:
    1. Ascertain work flows, e.g., handling of information requests.
    2. Review work flow results or products.
    3. Identify productivity change requirements to accommodate DGIS.

b. Survey office unit responses for information:
    1. Identify subject areas for which information is provided.
    2. Determine appropriate database resources according to subject needs.
    3. Identify types and characteristics of requesters.
    4. Identify office unit DROLS users who are also prospective DGIS users.
    5. Recommend core set of applicable database resources.

PHASE III. Identify Operations for Enhancement by DGIS.

a. Identify problem areas.
b. Identify management decision points.
c. Propose solutions.
d. Identify benefits of proposed solutions.
e. Merge office unit expertise and DGIS expertise.
f. Propose DGIS applications to office unit operations.
g. Create formal plan for DGIS implementation.

PHASE IV. Plan Implementation.

a. Office unit information access:
    1. Establish core databases.
    2. Establish passwords.
    3. Establish office unit criteria for external database searching.
    4. Establish training requirements.

b. Equipment requirements:
    1. Hardware
        a) CRT terminal(s) and cables.
        b) Modem(s) and cables.
        c) Printer(s) and cables.
    2. Telecommunications
        a) Telephone lines (dedicated).
    3. Software enhancements.

c. Phased incorporation of DGIS applications.

d. Test period:
    1. Test plan.
    2. Equipment "bugs" liaison.

e. Review and evaluation:
    1. Operational enhancement results.
    2. Office policy.

f. Formal implementation:
    1. DGIS "Hotline" provision.
    2. DGIS "bugs" liaison.
    3. Implementation review.
    4. Implementation declared operational.

V. SUPPLEMENTARY FACTORS

As the effort evolved a number of additional factors came to light. These factors showed themselves as items that would likely become involved in planning for DGIS implementation and cause possible complications. They are:

1. Motivation for Implementation.

    a. Benefits for implementation inhouse were seen as being:
        (1) Task diversification
        (2) Product enhancement
        (3) Expanded service orientation

    b. Hurdles to implementation were seen as being:
        (1) Office operations expansion
        (2) Task changes
        (3) Productivity accountability problems
        (4) Product enhancement vis-a-vis productivity enhancement
        (5) Management support

    c. DTIC mandate for implementation:
        (1) DTIC Administrator mandate, Oct 85
        (2) Marketing expanded services to DTIC users

2. Accountability Factors.

    a. Diverse database accessing:
        (1) Passwords responsibility and handling
        (2) DGIS access
        (3) External database accesses
        (4) Telecommunications net accesses

    b. External database access costs:
        (1) External database search costs
        (2) FEDLINK participation
        (3) Major Federal database access reciprocity agreements
        (4) Aspect of who pays whom
        (5) Cost reimbursements handling
        (6) Billing of registered DTIC user
        (7) Billing of DTIC

    c. DGIS use accountability:
        (1) DGIS user use and utilities accountability
        (2) System-generated use records
        (3) System-generated external database access records

3. Training Factors.

    a. DGIS training:
        (1) DGIS modes
        (2) DGIS operations and utilities

    b. External database training.

VI. TESTBED OFFICE INFORMATION FLOW SURVEY

1. Survey Objective.

The purpose of the information flow survey was to identify:

a. The kinds of information that the office is asked to supply,
b. The information that the office is supplying,
c. The kinds of DTIC users requesting information through this office.

The objective of the survey was to determine external database information resources that would give this office the capability to provide a comprehensive set of results, as an adjunct to DROLS results. The study, therefore, centered around obtaining background information inside the unit on that unit's users who request DROLS searches through them, and compiling the subject areas of the search requests. The flow information gained would then help target the appropriate user population of the office, as well as determine the DGIS capabilities needed. With the analysis of the subject search areas, a list of online databases could be drawn up as recommended sources for that office. From that a set of core databases would be established, given priority for setting up automatic connects through DGIS, and as a result provide the office staff expanded capabilities in servicing their users.

2. Methodology.

The methodology broke out into studying the three basic parts of the information query flow for this office:

a. The sources of the information requests,
b. How the requests are controlled,
c. The criteria for information response.

In the case of the testbed office, requests are received both by mail and by telephone from presumably DTIC-registered users. A retrieval person validates the eligibility of the requestor for DTIC services, and formulates a strategy for searching the query in DROLS. A query receipt sequence number is assigned to each query. After the search has been completed, the search request form is filed for future reference under the sequence number in batches of 100.

A sample of the batched search requests was selected, with 100 requests during each of six months, July through December, 1985. A review of the sampling brought out the following factors that influence the processing of the query in the testbed office:

- Is the user a DoD facility, a DoD contractor, a non-DoD facility?
- What is the user's facility clearance?
- Does the user have DROLS access?
- What is the subject of the search?
- What will be the classification of the information in the search results?

Of an initial 600 requests for the six months, 585 were analyzed. The 15 excluded resulted from cancellations, non-valid requesting, et al. The above factors surfaced as having influence on DTIC's response requirements in the dissemination of DoD scientific and technical information. These factors, in identifying the office's user population, would also anticipate the population for the office's DGIS application. For example, DGIS-applied services will likely be offered by this office first to DoD facilities. Any such facility must have at least confidential clearance at this time to have online access to DROLS. DGIS offers access, however, only to unclassified information. But with DROLS information included, the classification level of the DTIC user must be taken into account.

3. Analysis Results.

In this sampling, requests for information to this office came from 212 registered DTIC users. Of these users, 70 were DoD facilities, and 142 were primarily DoD contractors, with a few non-DoD organizations eligible for DTIC services. 170 users had a secret facility clearance, 3 had confidential, and 39 had unclassified. Only 9 users had secret DROLS access, 1 had confidential, 56 had unclassified, and 146 had no access to DROLS, but were eligible for DTIC services.

In the breakout of the subject areas that the testbed office generally handles, a survey of external databases resulted in a surprisingly large number of potentially pertinent information resources that could be used as expanded information resources. Using the COSATI subject fields for categorizing subject queries, the following shows the number of queries for the six months survey:

01 Aeronautics	42
02 Agriculture	0
03 Astronomy and Astrophysics	1
04 Atmospheric Sciences	3
05 Behavioral and Social Sciences	58
06 Biological and Medical Sciences	16
07 Chemistry	2
08 Earth Sciences and Oceanography	6
09 Electronics and Electrical Engineering	52
10 Energy Conversion (Non-Propulsive)	5
11 Materials	28
12 Mathematical Sciences	13
13 Mechanical, Industrial, Civil and Marine Engineering	25
14 Methods and Equipments	10
15 Military Sciences	105
16 Missile Technology	19
17 Navigation, Communications, Detection and Countermeasures	64
18 Nuclear Science and Technology	4
19 Ordnance	38
20 Physics	34
21 Propulsion and Fuels	10
22 Space Technology	23

External database resources found pertinent to the topical areas, categorized by general subject, are:

A. GENERAL INFORMATION

NTIS - National Technical Information Service - Government-sponsored research, development and engineering reports prepared by federal agencies, their contractors or grantees. Wide subject coverage; also covers federally generated machine readable files and software, and U. S. Government inventions available for licensing. (BRS, DIALOG, SDC)

CIS - Congressional Information Service - Index to publications in the U. S. House, Senate, and Joint Committees and Subcommittees. (DIALOG, SDC)

Magazine Index - Broad subject coverage of popular literature. (DIALOG)

National Newspaper Index - Indexes Christian Science Monitor, New York Times, and Wall Street Journal. (DIALOG)

NDEX - Newspaper Index - Nine major U. S. newspapers and 10 black newspapers are indexed. (SDC)

NEWSEARCH - Daily update of Magazine Index, National Newspaper Index, and Legal

Resource Index. (DIALOG)

UPI News - Full text of stories carried on United Press International wire. (DIALOG)

B. AERONAUTICS

Aerospace Database - Aerospace basic and applied research, development, and technological applications. (DIALOG)

COMPENDEX - See Mechanical, Industrial, Civil and Marine Engineering.

NASA/RECON - Aerospace technology.

Soviet Science and Technology - Scientific and technological information published in Soviet bloc countries; wide subject coverage including aerospace, aeronautics, computers, metallurgy, and robotics. (DIALOG)

C. AGRICULTURE

AGRICOLA - U. S. Department of Agriculture; agriculture and related fields. (BRS, DIALOG)

CAB Abstracts - Chemical-topic oriented, including agriculture and related fields. (DIALOG)

D. ASTRONOMY AND ASTROPHYSICS

Aerospace Database - see Aeronautics.

Meteorological and Geoastrophysical Abstracts - See Atmospheric Sciences.

NASA/RECON - See Aeronautics

Soviet Science and Technology - see Aeronautics.

E. *ATMOSPHERIC SCIENCES*

Meteorological and Geoastrophysical Abstracts - Meteorology, astrophysics, physical oceanography, hydrology, environmental sciences, glaciology. (DIALOG)

NOAA Climate Assessment Database - Meteorology, environmental sciences.

F. BEHAVIORAL AND SOCIAL SCIENCES

ABI/INFORM - Management and business. (BRS, DIALOG, SDC)

America: History and Life - U. S. and Canadian history, area studies, and current affairs. (DIALOG, SDC)

ERIC - Department of Education; educational materials including languages and linguistics, test, measurements, and evaluations. (DIALOG, SDC)

Historical Abstracts - History and the related social sciences and humanities. (DIALOG)

Information Science Abstracts - Library and information science. (DIALOG)

Linguistics and Language Behavior Abstracts - Languages, linguistics, lexicography. (DIALOG)

LISA - Library and Information Science Abstracts - Library and information science, publishing, reprography. (DIALOG, SDC)

Management Contents - Business and management-related topics to aid decision making and forecasting. (BRS, DIALOG, SDC)

MLA Bibliography - Modern Language Association - Modern languages and literatures. (DIALOG)

NCJRS - National Criminal Justice Reference Service - Criminal justice and law enforcement. (DIALOG)

PAIS - Public Affairs Information Service - Social sciences with emphasis on contemporary public issues and public policy. (BRS, DIALOG)

Population Bibliography - Socio-economic aspects population topics. (DIALOG)

PSYCHINFO - Psychology, sociology, education, physiology, and linguistics. (BRS, DIALOG, SDC)

PTS PROMPT - Information on companies, industries, products, and marketing. (BRS)

Religion Index - Religion, theology, church history, the sociology and psychology of religion and related areas in the humanities, social sciences, and current events. (BRS, DIALOG)

Social SCISEARCH - Social, behavioral, and related sciences, including communication, linguistics, management, political science, and statistics. (BRS, DIALOG)

Sociological Abstracts - Sociology and related disciplines. (BRS, DIALOG)

G. BIOLOGICAL AND MEDICAL SCIENCES

BIOSIS - Biology, including aerospace biology, behavioral sciences, bioengineering, radiation biology, and toxicology. (BRS, DIALOG)

Federal Research in Progress - See Mechanical, Industrial, Civil, and Marine Engineering.

MEDLARS - National Library of Medicine - Biomedical sciences. In addition to being a major national information system, parts of this database are also available on BRS and DIALOG.

Occupational Safety and Health - National Institute for Occupational Safety and Health (NIOSH) - Occupational health and safety. (DIALOG)

SPORT - Sports and recreation. (SDC)

TOXLINE - National Library of Medicine - Toxicology. (MEDLARS)

H. CHEMISTRY

Chemical Abstracts - Chemistry (with abstracts). Parts of this database are also on BRS, DIALOG, and SDC.

COMPENDEX - See Mechanical, Industrial, Civil, and Marine Engineering.

MEDLARS - See Biological and Medical Sciences.

I. EARTH SCIENCES AND OCEANOGRAPHY

Federal Research in Progress - See Mechanical, Industrial, Civil, and Marine Engineering.

Geoarchive - Geoscience, including energy sources, geology, minerology, oceanography, petrology, tectonics, and water. (DIALOG)

GEOREF - Geology and geophysics. (DIALOG, SDC)

Meteorological and Geoastrophysical Abstracts - see Atmospheric Sciences.

J. ELECTRONICS AND ELECTRICAL ENGINEERING

COMPENDEX - See Mechanical, Industrial, Civil, and Marine Engineering.

Computer Database - Computers, telecommunications, electronics. (DIALOG)

INSPEC - See Mechanical, Industrial, Civil, and Marine Engineering.

Microcomputer Index - Microcomputers in business, education, and the home. (DIALOG)

RBOTS - Robotics. (BRS)

Soviet Science and Technology - See Aeronautics.

K. ENERGY CONVERSION

DOE/RECON - Department of Energy - Energy field.

L. MATERIALS

Corrosion - Effects of corrosive agents on widely used materials. (SDC)

MDF - Metals Data File - Properties, designation and specification numbers for metals. (DIALOG, SDC)

METADEX - Metals literature, including materials, processes, properties, products, forms. (DIALOG, SDC)

Nonferrous Metals Abstracts - Production, properties, fabrication, and uses of nonferrous metals. (DIALOG)

Textile Technology Digest - textiles and related subjects. (SDC)

World Aluminum Abstracts - Aluminum, exclusive of mining. (DIALOG)

World Textiles - Science and technology of textiles. (DIALOG)

M. MATHEMATICAL SCIENCES

MATHFILE - Pure and applied mathematics, computer science, physics engineering, biology, operations research. and other related fields. (DIALOG)

N. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING

COMPENDEX - Engineering, including civil engineering, environmental, geological, biological, electrical, chemical, mechanical, industrial, nuclear, and aerospace engineering, as well as mining, metals, and fuel engineering. (BRS, DIALOG, SDC)

Federal Research in Progress - Information about ongoing federally-funded research projects in the physical sciences, engineering, and life sciences. This is a non-bibliographic file. (DIALOG)

INSPEC - Physics, electrical engineering, electronics, computers, control engineering, optics, mathematics, nuclear physics. (BRS, DIALOG, SDC)

Packaging Science and Technology Abstracts - All aspects of packaging. (DIALOG)

O. METHODS AND EQUIPMENT

Refer to Directory of DoD-Sponsored Data Bases; refer to explanation in paragraph 4 below: Conclusions and Recommendations.

P. MILITARY SCIENCES

CADRE - Available on ACE-AUSINET - Australia

CEDOCAR - To be available on QUESTEL - France

PTS Defense Markets and Technology - Defense industry. (DIALOG)

TRIS - Transportation Research Information Service - Transportation. (DIALOG)

Q. MISSILE TECHNOLOGY

Aerospace Database - See Aeronautics.

COMPENDEX - See Mechanical, Industrial, Civil, and Marine Engineering.

NASA/RECON - See Aeronautics.

Soviet Science and Technology - see Aeronautics.

R. NAVIGATION, COMMUNICATIONS, DETECTION, AND COUNTERMEASURES

NASA/RECON - See Aeronautics.

S. NUCLEAR SCIENCE AND TECHNOLOGY

COMPENDEX - See Mechanical, Industrial, Civil, and Marine Engineering

DOE/RECON - See Energy conversion.

T. ORDNANCE

Refer to Directory of DoD-Sponsored Data Bases; refer to explanation in paragraph 4 below: Conclusions and Recommendations.

U. PHYSICS

COMPENDEX - See Mechanical, Industrial, Civil, and Marine Engineering

INSPEC - See same.

V. PROPULSION OF FUELS

DOE/RECON - See Energy Conversion.

W. SPACE TECHNOLOGY

Aerospace Database - See Aeronautics.

COMPENDEX - See Mechanical, Industrial, Civil, and Marine Engineering

NASA/RECON - See Aeronautics.

Soviet Science and Technology - See Aeronautics.

4. Conclusions and Recommendations.

First, the user breakout indicates that the users of the testbed office, in making requests to this particular office for DROLS searches, are not likely to perform their own literature searches on DGIS This office, therefore, should have a large group of users for whom they can expand their services through multiple database searching for locating comprehensive information, as a supplement to DROLS results.

Second, the survey of the office information flow in conjunction with the survey of the external databases pertinent to responding to the user population, results in the following databases recommended as a core set. The criteria are database scope and subject coverage. The reasons for their selection are given.

a. GENERAL:

NTIS: This database is a comprehensive information resource of RDT&E from throughout the federal government. Its total holdings exceed DROLS. NTIS includes material from both the hard and soft sciences, with substantial material on technological applications, business procedures, and regulatory matters. (DIALOG Database Catalog)

b. SOFT SCIENCES:

Social SCISEARCH: This database is a comprehensive, multidisciplinary resource, with holdings exceeding DROLS. Its information covers the natural, physical, and biomedical sciences, in addition to social and behavioral sciences. (DIALOG Database Catalog)

c. AERONAUTICS/AEROSPACE (& related technologies):

NASA/RECON. Major federal database at the same level as DROLS, covering all aspects of aeronautics and aerospace RDT&E and related technologies, e.g., navigation, communications, detection and countermeasures.

d. ENGINEERING SCIENCES:

COMPENDEX. Major comprehensive engineering information resource, exceeding DROLS collection. World-wide coverage of significant engineering and technological literature. (DIALOG Database Catalog)

e. MILITARY SCIENCES (including ORDNANCE):

This subject is obviously defense-related. DTIC has compiled a directory of DoE-sponsored R&D databases, listing 400+ DoD resources. The primary problem at this time is access. A DTIC thrust should be establishing online access to these military science resources for more comprehensive information. (Directory of DoD-Sponsored R&D Data Bases, Sep 84, AD-B085 600)

f. PHYSICS:

INSPEC: Par exceeding DROLS holdings, it is the largest English-language database in the fields of physics, electrotechnology, computers and control, and information technology. (DIALOG Database Catalog)

Please note that access to the major database vendors, DIALOG, BRS, and SDC, would put the office in touch with most pertinent databases.

III. RETRIEVAL OFFICE PARTICIPANTS

The Retrieval Analysis Branch participants not only lent full cooperation to this effort but also made a great many comments and suggestions on system applications and comparisons. In a few cases it was their highly professional demeanor that stoically carried them through the vagaries of a system that is still in prototype stage. Their extensive knowledge and skill in working with DTIC-DROLS in conjunction with how DROLS may interface with [illegible] greatly appreciated.

Walter Marfione, Chief, Retrieval Analysis Branch, fully supported this effort. Tim Aikens and Al Miller were directly involved in the project. Don Gilliam, Tom Lee, Tom Jones, Tim McCleery and Bill Payne also contributed through their discussions and observations.

VIII. PROJECT DEVELOPMENT PARTICIPANTS

Marjorie Powell of the DTIC Information Research and Technology Division (DTIC-EA) fully participated in this project, rendering valuable assistance in coordinating user needs with the testbed office functions, and in applying her extensive knowledge of the DGIS information processing functions.

Georgene Chastain, currently participating in the DTIC Information Sciences Intern Program, called into play her reference librarianship skills and aided in the testbed office information flow survey.

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